

**APPLETON PRODUCE FRESH PACK (PWS 3440027)
APPLETON PRODUCE IQF, FROZEN(PWS 3440031)
SOURCE WATER ASSESSMENT FINAL REPORT**

April 10, 2001



**State of Idaho
Department of Environmental Quality**

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on the data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Appleton Produce Fresh Pack drinking water system consists of one well, PWS 3440027. From November 1999 to November 2000, total coliform bacteria was detected in water samples collected from the Appleton Produce Fresh Pack well. From May 1997 to June 1999, arsenic levels ranged from 0.02 milligrams per liter (mg/l) to 0.067 mg/l. The May 8, 1997 concentration of arsenic detected in the Appleton Produce Fresh Pack well (0.067 mg/l) exceeded the MCL for arsenic of 0.05 mg/l. The new MCL for arsenic, approved by the U. S. Environmental Protection Agency in January 2001, is 0.01 mg/l. From May 1997 to June 2000, nitrate levels ranged from 1.64 mg/l to 9.0 mg/l (MCL is 10 mg/l). In May 1998, fluoride concentrations of 0.42 mg/l (MCL is 4 mg/l) were detected in the Appleton Produce Fresh Pack well. The delineation capture zone crosses a nitrate priority area, and also crosses an organics priority area for pesticides, though no pesticide has been detected in any water samples collected from the Appleton Produce Fresh Pack well.

A Sanitary Survey conducted in August 1998 recommended that a sample tap and well vent be properly installed to meet standards. The Sanitary Survey also noted that the well was located in a below ground pit near the loading bays. In terms of total susceptibility, the Appleton Produce Fresh Pack well water rated high for inorganic contaminants, volatile organic contaminants, synthetic organic contaminants, and microbial contaminants mainly due to well construction, location, agricultural land uses and the nearby location of two irrigation canals.

The Appleton Produce IQF, Frozen, PWS 3440031, drinking water system consists of one well. From April 1999 to June 2000, nitrate levels ranged from 1.13 mg/l to 3.79 mg/l. In January 2001, arsenic was detected at a concentration of 0.01 mg/l which meets the newly approved MCL of 0.01 mg/l. The delineation capture zone crosses a nitrate priority area, an inorganics priority area, and an organics priority area for pesticides, though no pesticide have been detected in any water samples collected from the Appleton Produce IQF, Frozen well. A sanitary survey conducted in August 1998 recommended that a sample tap be properly installed and the well vent turned down and screened to meet standards. The Sanitary Survey also noted that the well was located in a below ground pit and within thirty feet of an irrigation ditch.

In terms of total susceptibility, the Appleton Produce IQF, Frozen well water rated high for inorganic contaminants, volatile organic contaminants, synthetic organic contaminants, and microbial contaminants mainly due to nitrate, arsenic, and potential pesticide contamination in the area. Well

location contributes to the high susceptibility rating since the well, located in a pit, is bounded by two irrigation canals located within 30 feet of the well. Agricultural land uses and the nearby location of Highway 95 also contributes to the high susceptibility of the Appleton Produce IQF, Frozen well.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen, source water protection activities should first focus on correcting, if corrections have not been completed, the deficiencies outlined in the Sanitary Survey and protection of the wells from surface runoff. Since arsenic contamination may exceed future drinking water standards, Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat this problem. Any spills from River Road and the Union Pacific Railroad should be carefully monitored in relation to the Appleton Produce Fresh Pack well. Any spills from Highway 95 should be carefully monitored in relation to the Appleton Produce IQF, Frozen well. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Most of the designated areas are outside the direct jurisdiction of the Appleton Produce. Partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Weiser River Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully-developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR APPLETON PRODUCE FRESH PACK AND APPLETON PRODUCE IQF, FROZEN, WEISER, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area is attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Appleton Produce Fresh Pack well (PWS 3440027) is a non-community non-transient well serving approximately 90 people, located in Washington County, east of Weiser, north of River Road (Figure 1). The public drinking water system for Appleton Produce Fresh Pack is comprised of one well.

The primary water quality issues currently facing Appleton Produce Fresh Pack are arsenic contamination, nitrate contamination, total coliform bacteria contamination, and possible synthetic organic chemical (SOC) contamination from pesticides and the problems associated with managing this contamination. In recent years, the well has recorded the presence of arsenic above the MCL and nitrate approaching the MCL.

The Appleton Produce IQF, Frozen (PWS 3440031) well is a non-community non-transient well serving approximately 155 people with one connection, located in Washington County, northwest of Weiser on the south side of Highway 95 (Figure 1). The public drinking water system for Appleton Produce IQF, Frozen is comprised of one well.

The primary water quality issues currently facing Appleton Produce IQF, Frozen are arsenic contamination, nitrate contamination, and possible synthetic organic chemical (SOC) contamination from pesticides and the problems associated with managing this contamination. In recent years, the well has recorded the presence of arsenic at the new MCL and nitrate below the MCL.

Defining the Zones of Contribution--Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time of travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) time-of-travel (TOT) for water associated with the Scott Creek-Mann Creek aquifer in the vicinity of the Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen. The computer model used site-specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports (Clark, 1985; DEQ, 1991; DEQ, 1995; USGS, 1996).

The delineated source water assessment area for Appleton Produce Fresh Pack can best be described as a corridor 0.4-mile wide and 0.8-mile long extending northeast parallel to Highway 95. The delineated source water assessment area for Appleton Produce IQF, Frozen can best be described as a corridor 0.25-mile wide and 0.75-mile long extending northeast, below and roughly parallel to Highway 95. The actual data used by DEQ in determining the source water assessment delineation area are available upon request.

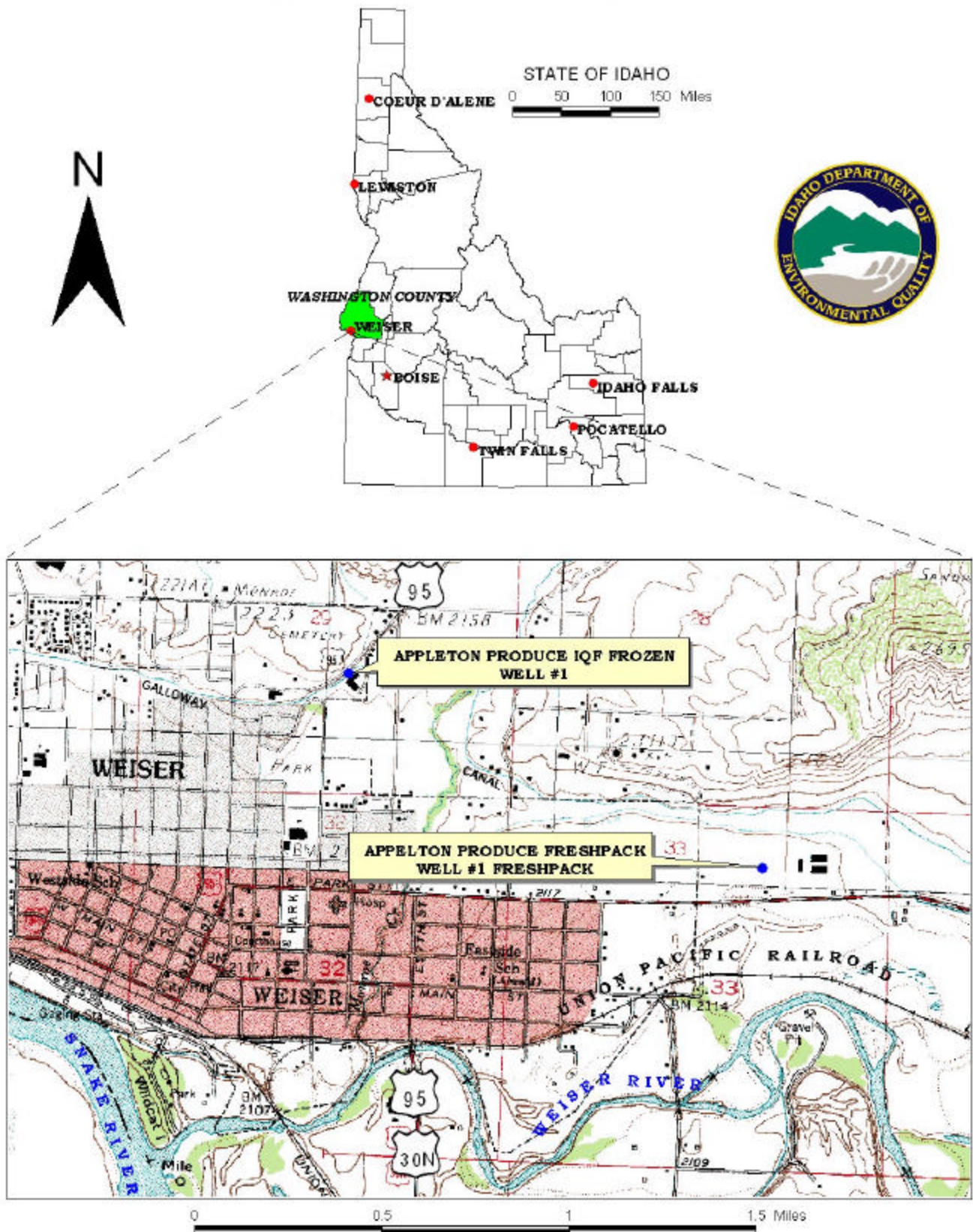
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside the Appleton Produce Fresh Pack wellhead area is urban and agriculture with one major transportation corridor, the Union Pacific Railroad. Land use within the immediate area of the wellhead consists of agriculture including two irrigation canals. The dominant land use outside the Appleton Produce IQF, Frozen wellhead area is urban and agriculture. Land use within the immediate area of the wellhead consists of urban and agriculture with one major transportation corridor, Highway 95, and two irrigation canals.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

FIGURE 1. Geographic Location of Appleton Produce Wells



Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during January of 2000. The first phase involved identifying and documenting potential contaminant sources within the Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ. The second or enhanced phase of the contaminant inventory involved contacting the operator to validate the sources identified in phase one and to add any additional potential sources in the area. This task was undertaken with the assistance of R. Pack.

The sources of contamination located within the delineated source water area for Appleton Produce Fresh Pack are listed in Table 1 and shown on Figure 2. These sources include the loading area near the well and the irrigation canal (Table 1, Figure 2). Pictures from the 1988 Sanitary Survey show truck tire tracks directly adjacent to the well vault. Additionally, River Road is located adjacent to the 3-year time of travel zone. If an accidental spill occurred in the loading area near the well, from the irrigation canal, or from the transportation corridor, inorganic contaminants (IOCs), volatile organic contaminants (VOCs), synthetic organic contaminants (SOCs), or microbial contaminants could be added to the aquifer system. Contaminants of concern are primarily related to arsenic contamination, nitrate contamination, and to the organic priority areas for nitrate and for pesticides associated with the irrigated agriculture land use of the area.

Table 1. Appleton Produce Fresh Pack Potential Contaminant Inventory

SITE #	Source Description	TOT Zone ¹ (years)	Source of Information	Potential Contaminants ²
1	Food Processing Facility and Loading Area	0-3	Sanitary Survey	IOC, VOC, SOC, and Microbes
2	Irrigation Canal	0-3	GIS Maps	IOC, VOC, SOC, and Microbes

¹ TOT = time of travel (in years) for a potential contaminant to reach the wellhead

² IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Appleton Produce IQF, Frozen contains seven potential contaminant sources (Table 2, Figure 3). These potential sources include the Idaho Department of Transportation maintenance facility, the Highway Department maintenance facility, Appleton Produce, Highway 95, and two irrigation canals. If an accidental spill occurred from Appleton Produce, the irrigation canal, or from the Highway, inorganic contaminants (IOCs), volatile organic contaminants (VOCs), synthetic organic contaminants (SOCs), or microbial contaminants could be added to the aquifer system. If an accidental spill occurred from the Highway Department or the Idaho Transportation Department, IOCs, VOCs, and SOCs could be added to the aquifer system. Contaminants of concern are primarily related to arsenic contamination, nitrate contamination from the inorganic priority area for arsenic, and the organic priority areas for nitrate and for pesticides associated with the irrigated agriculture land use of the area.

Table 2. Appleton Produce IQF, Frozen Potential Contaminant Inventory

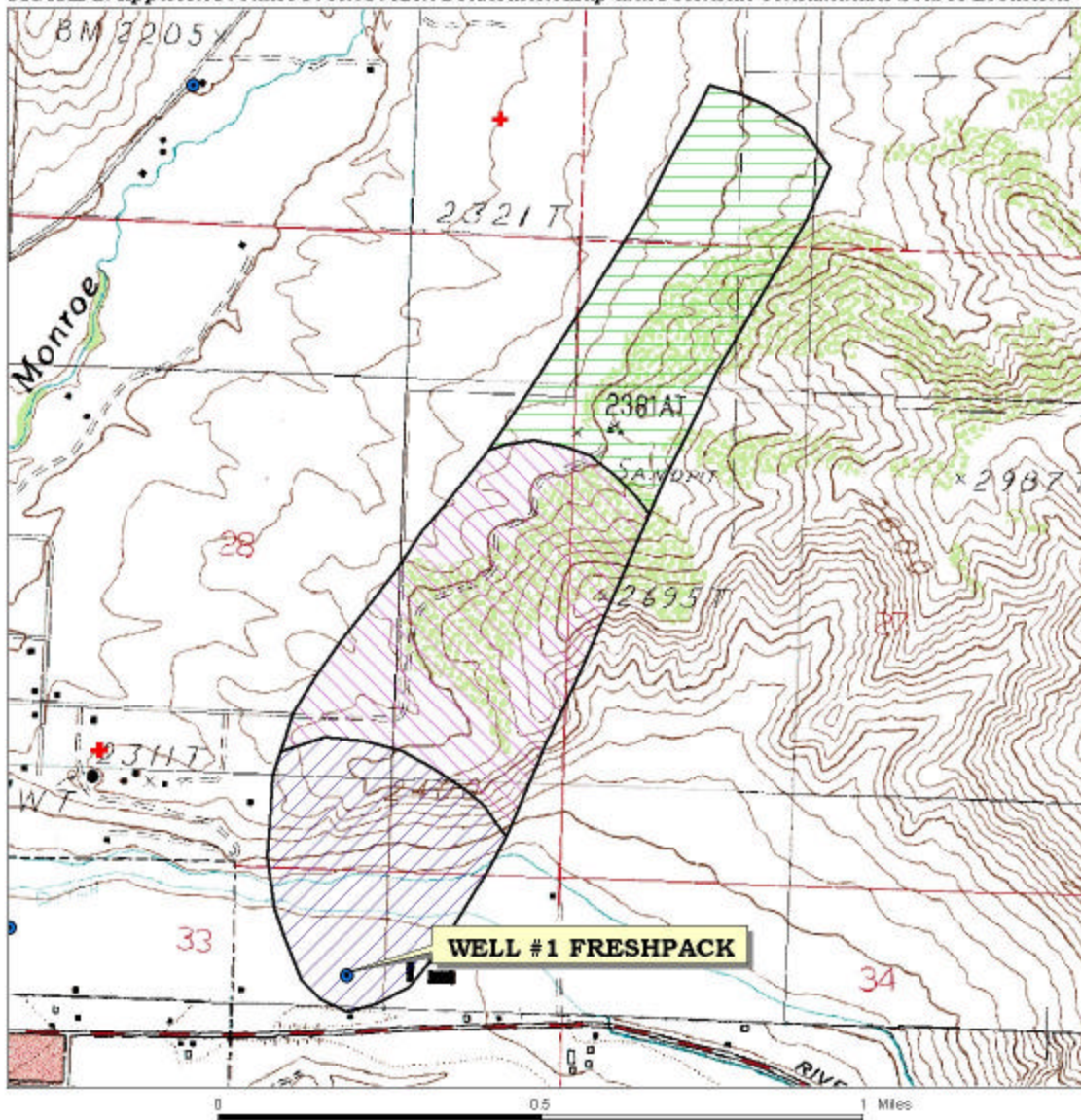
SITE #	Source Description ¹	TOT Zone ² (years)	Source of Information	Potential Contaminants ³
1	UST	0-3	Database Search	VOC, SOC
2	Highway Department	0-3	Database Search	IOC, VOC, SOC
3	SARA	0-3	Database Search	IOC, VOC, SOC
4	SARA	0-3	Database Search	IOC, VOC, SOC, Microbes
5	Highway 95	0-3	GIS Map	IOC, VOC, SOC, Microbes
6	Irrigation Canal	0-3	Sanitary Survey	IOC, VOC, SOC, Microbes
7	Irrigation Canal	0-3	Sanitary Survey	IOC, VOC, SOC, Microbes

¹ UST = underground storage tank, SARA = Superfund Amendments and Recovery Act site

² TOT = time of travel (in years) for a potential contaminant to reach the wellhead

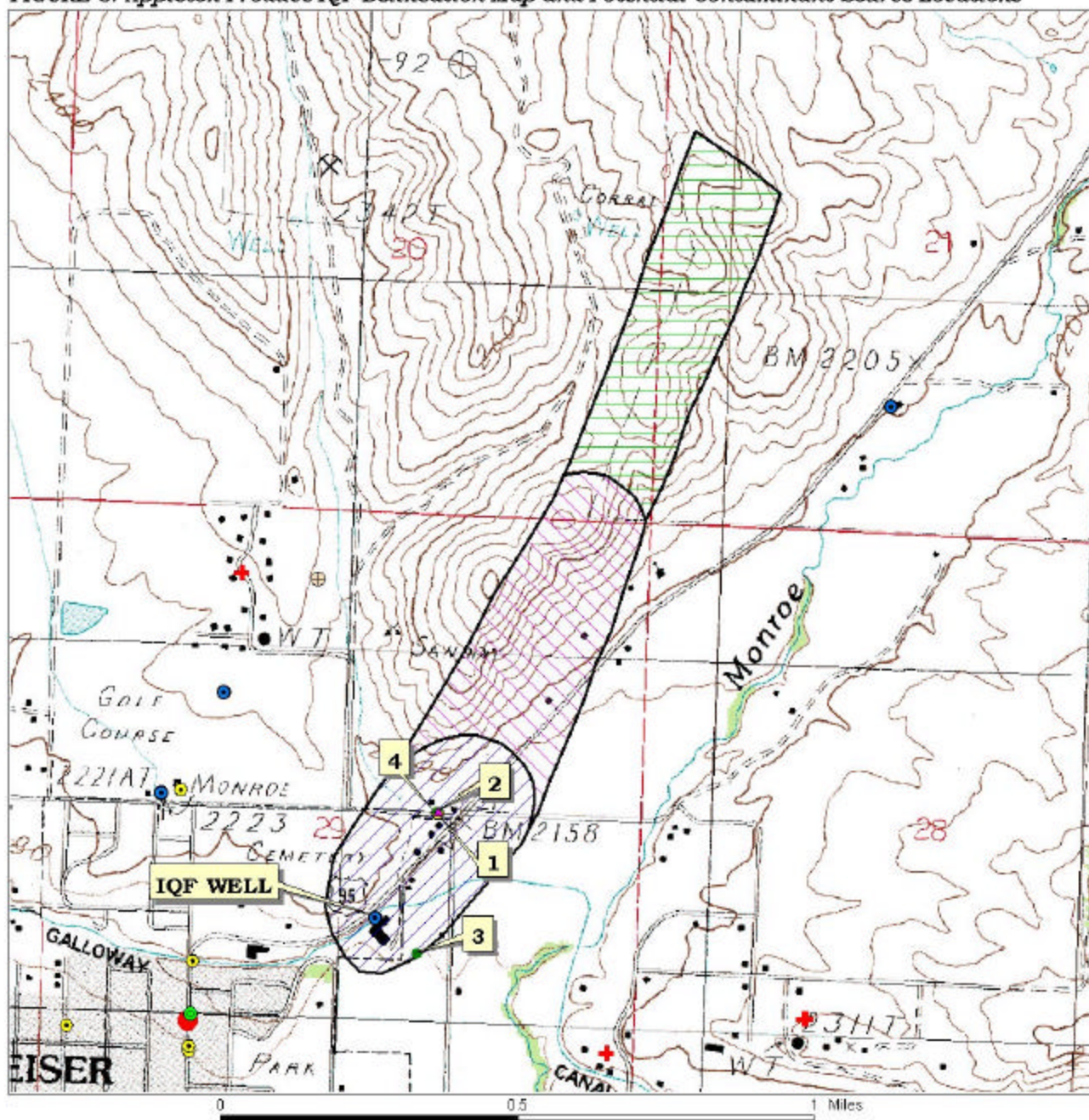
³ IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

FIGURE 2. Appleton Produce Fresh Frozen Delineation Map and Potential Contaminant Source Locations



PWS# 3440027
WELL 1 FRESHPACK

FIGURE 3. Appleton Produce IQF Delineation Map and Potential Contaminant Source Locations



PWS# 3440031
IQF WELL

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity was moderate for the Appleton Produce Fresh Pack well (see Table 3). This reflects the nature of the soils being in the poorly to moderately drained class, which provides some impedance to the downward movement of contaminants. No well log was available, but nearby wells show that the vadose zone (zone from land surface to the water table) is composed of gravels and clayey gravels, which facilitates the downward movement of contaminants.

Hydrologic sensitivity was moderate for the Appleton Produce IQF, Frozen well (see Table 4). This reflects the nature of the soils being in the poorly to moderately drained class, which provides some impedance to the downward movement of contaminants as does the sandy clay in the vadose zone (zone from land surface to the water table). The well does not have the requisite 50 feet of cumulative low permeability formations which also contributes to the moderate score.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The Appleton Produce Fresh Pack drinking water system consists of one well that extracts ground water for business and employee uses. The well system construction score was high for the well, based on a 1998 sanitary survey and the lack of a well log. The well was out of compliance with Idaho Department of Environmental Quality Design Standards for Public Drinking Water Systems (IDAPA 58.01.08.550.01) because there was no air vent, no sample tap, and the well is in a pit near the loading docks subject to truck traffic. Flood protection standards are being met. Lack of a well log prevented a determination of whether current Idaho Department of Water Resources standards are being met. Important protection aspects of the current standards include casing thickness and whether the casing and annular seal had been extended into a low permeability unit.

The Appleton Produce IQF, Frozen drinking water system consists of one well that extracts ground water for business and employee uses. The well system construction score was moderate for the well, based on a 1998 sanitary survey and information from the well log. The well was substantially in compliance although the air vent needs to be turned down and screened, and the well is in a pit 30 feet from an irrigation ditch. Flood protection standards are not being met. The well log indicates that the water producing zone is less than 100 feet below static water level. The well casing extends into the blue clay layer and is 0.250" thick and 8" in diameter. Idaho Department of Water Resources (IDWR) standards require a thickness of 0.322" for 8" diameter casing. Also, the pump test for this well did not

meet the minimum time required by IDWR standards of 6 hours for wells producing over 50 gpm of water.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction.

Based on water chemistry data and local area well logs, the Appleton Produce Fresh Pack well is most likely in the upper, unconfined aquifer. The blue clay that forms the barrier between the upper, unconfined sand and gravel, river-deposited aquifer and the deeper, semi-confined lacustrine (lakebed deposit) aquifer is found at 30 to 75 feet below ground surface.

Based on water chemistry data and the well log, the Appleton Produce IQF, Frozen well is in the lower, semi-confined aquifer. The blue clay that forms the barrier between the upper, unconfined sand and gravel, river-deposited aquifer and the deeper, semi-confined lacustrine (lakebed deposit) aquifer is found at 73 feet below ground surface in this well.

Potential Contaminant Source and Land Use

The Appleton Produce Fresh Pack well rated high for IOC's (i.e. arsenic, nitrate), VOCs (i.e. petroleum products), SOC's (i.e. pesticides), and microbes (i.e. total coliform). The presence of potential contaminant sources in Zone 1A as well as the detection of arsenic above the MCL contributed to the ranking. The potential contaminant sources in Zone 1A are delivery trucks and the loading bays located near the well. Since the well is located in a pit, surface runoff could carry IOC's, VOCs, SOC's, and microbes into the well pit and potentially into the well. Agricultural chemical sources, the irrigation canal, and irrigated agricultural land use in the delineated source area contributed the largest numbers of points to the contaminant inventory rating in Zone 1B.

From November 1999 to November 2000, total coliform bacteria were detected in water samples collected from the Appleton Produce Fresh Pack well. From May 1997 to June 1999, arsenic levels ranged from 0.02 mg/l to 0.067 mg/l. The May 8, 1997 concentration of arsenic detected in from the Appleton Produce Fresh Pack well (0.067 mg/l) exceeded the MCL for arsenic of 0.05 mg/l. The new MCL for arsenic, approved by the U. S. Environmental Protection Agency in January 2001, is 0.01 mg/l. From May 1997 to June 2000, nitrate levels ranged from 1.64 mg/l to 9.0 mg/l (MCL is 10 mg/l). In May 1998, sodium and fluoride concentrations of 32.1 mg/l and 0.42 mg/l, respectively, were detected in from the Appleton Produce Fresh Pack well. The delineation capture zone crosses a nitrate priority area. The delineation capture zone also crosses an organics priority area for the pesticide Atrazine, though this chemical has not been detected in any water samples collected from the Appleton Produce Fresh Pack well.

The Appleton Produce IQF, Frozen well rated moderate for IOC's (i.e. arsenic, nitrate), VOCs (i.e. petroleum products), SOC's (i.e. pesticides), and microbes (i.e. total coliform). The presence of potential contaminant sources in zone 1A as well as the detection of arsenic at the MCL contributed to the moderate ranking. Since the well is located in a pit, surface runoff could carry IOC's, VOCs, SOC's, and microbes into the well pit and potentially into the well. Agricultural chemical sources, an irrigation canal, irrigated agricultural land use, USTs, SARA sites, and Highway 95 in the delineated source area contributed the largest numbers of points to the contaminant inventory rating. Although the well received a moderate ranking for potential contaminants and land use, the ranking was on the high end of moderate.

From April 1999 to June 2000, nitrate levels ranged from 1.13 mg/l to 3.79 mg/l. In January 2001, arsenic detected in the Appleton Produce IQF, Frozen well had a concentration of 0.01 mg/l which is at the newly approved MCL of 0.01 mg/l for arsenic. The delineation capture zone crosses a nitrate priority area and an inorganics priority area for arsenic. The delineation capture zone also crosses an organics priority area for the pesticide Atrazine, though this chemical has not been detected in any water samples collected from the Appleton Produce IQF, Frozen well.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Evidence of such pathways exists for both the Appleton Produce Fresh Pack and IQF, Frozen wells. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the wells rate high for IOCs, VOCs, SOCs, and microbial contaminants due to the presence of arsenic at or above the MCL and potential sources of contaminants in Zone 1A.

Table 3. Summary of Appleton Produce Fresh Pack Susceptibility Evaluation

Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	M	L	L	L	L	H	H*	H*	H*	H*

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* = High ranking based on the presence of IOCs above the MCL or the presence of potential contaminant sources in Zone 1A.

Table 4. Summary of Appleton Produce IQF, Frozen Susceptibility Evaluation

Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	M	M	M	M	M	M	H*	H*	H*	H*

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* = High ranking based on the presence of IOCs above the MCL or the presence of potential contaminant sources in Zone 1A.

Susceptibility Summary

Arsenic levels have approached and exceeded the drinking water MCL for Appleton Produce Fresh Pack. Currently, arsenic levels exceed the new MCL for Arsenic. Nitrate levels approach the drinking water MCL. The well falls into a nitrate priority area and a SOC priority area for the pesticides.

Arsenic levels have approached and met the drinking water MCL for Appleton Produce IQF, Frozen. Currently, arsenic levels are at the new MCL for Arsenic. Nitrate levels are below the drinking water MCL. The well falls into a nitrate priority area, an inorganics priority area for arsenic, and a SOC priority area for the pesticides.

The Appleton Produce Fresh Pack well most likely takes its water from the shallow, unconfined to semi-confined alluvial (river deposit) aquifer above the deeper semi-confined lacustrine (lakebed deposit) aquifer from which the Appleton Produce IQF, Frozen well takes its water. The shallow aquifer has been demonstrated to be a distinct water-bearing unit in terms of water quality, water yield, and the sources of recharge (DEQ, 2000). The shallow aquifer contains much higher levels of nitrate, lower levels of iron, and higher levels of arsenic than the deeper aquifer. Water yields from the shallow aquifer are significantly higher than from the deeper aquifer. Ground water in the shallow aquifer is recharged primarily from surface water irrigation, direct precipitation, and canal leakage while the sources of recharge to the deeper aquifer are indeterminate but are very likely much older.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully-developed source water protection program will incorporate many strategies. For Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen, source water protection activities should first focus on correcting the deficiencies outlined in the Sanitary Survey, if they have not been addressed, and protection of the well from surface runoff. Since arsenic contamination may exceed future drinking water standards, Appleton Produce Fresh Pack and Appleton Produce IQF, Frozen should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat this problem. Any spills from River Road and the Union Pacific Railroad should be carefully monitored in relation to the Appleton Produce Fresh Pack well. Any spills from Highway 95 should be carefully monitored in relation to the Appleton Produce IQF, Frozen well. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Most of the designated areas are outside the direct jurisdiction of the Appleton Produce. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State

Department of Agriculture, the Soil Conservation Commission, the Payette Soil and Water Conservation District, and the Natural Resources Conservation Service.

Since the aquifers appear to have alternating layers of clays, gravels, and sands, a deeper well could be installed which might offer better protection from inorganic contaminants for the Appleton Produce Fresh Pack well. Any new PWS well should meet the *Recommended Standards for Water Works* (1997) as outlined in IDAPA 37.03.09 and IDAPA 58.01.08.550. Water should be taken from beneath the blue clay layer since the upper aquifer has a higher potential for becoming contaminated.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office (208) 373-0550

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Clark, W.H., 1985. Water Quality Status Report Lower Weiser River, Washington County, Idaho. Idaho Department of Health and Welfare, Division of Environment. Water Quality Series No. 53.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho State Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1991. Ground Water and Soils Reconnaissance of the Weiser Flats and Sunnyside Area, Washington County, Idaho. Unpublished.

Idaho Division of Environmental Quality, 1995. An Evaluation of Arsenic in Ground Water in a Portion of Washington County, Idaho. Ground Water Quality Technical Report No.6. September, 1995.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

United States Geological Survey, 1996. Selected Geohydrologic Data from a Regional Aquifer-System Analysis of the Northern Rocky Mountains Intermontane Basins in Idaho. USGS Open-File Report 96-207.

Attachment A
APPLETON PRODUCE FRESH PACK
APPLETON PRODUCE IQF, FROZEN
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

- | | |
|--------|-------------------------|
| 0 - 5 | Low Susceptibility |
| 6 - 12 | Moderate Susceptibility |
| ≥ 13 | High Susceptibility |

1. System Construction

SCORE

Drill Date	01/01/1997	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1998
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	NO	1

Total System Construction Score 6

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2

Total Hydrologic Score 4

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
-----------	-----------	-----------	-----------------

Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	1	1

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	2	1	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B 25 to 50% Irrigated Agricultural Land		2	2	2	2

Total Potential Contaminant Source / Land Use Score - Zone 1B 8 5 6 4

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II Less than 25% Agricultural Land		0	0	0	

Potential Contaminant Source / Land Use Score - Zone II 0 0 0 0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	

Total Potential Contaminant Source / Land Use Score - Zone III 0 0 0 0

Cumulative Potential Contaminant / Land Use Score 9 6 7 5

4. Final Susceptibility Source Score

11 11 11 12

5. Final Well Ranking

High* High* High* High*

* High score due to presence of possible contaminant sources in Zone 1A, and/or detection of IOC above MCL. Rating would otherwise be on the high end of medium.

1. System Construction			SCORE			
Drill Date			11/17/1993			
Driller Log Available			YES			
Sanitary Survey (if yes, indicate date of last survey)			YES			
Well meets IDWR construction standards			NO			
Wellhead and surface seal maintained			NO			
Casing and annular seal extend to low permeability unit			YES			
Highest production 100 feet below static water level			NO			
Well located outside the 100 year flood plain			YES			
Total System Construction Score			4			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained			YES			
Vadose zone composed of gravel, fractured rock or unknown			NO			
Depth to first water > 300 feet			NO			
Aquitard present with > 50 feet cumulative thickness			NO			
Total Hydrologic Score			3			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A			IRRIGATED PASTURE	1	1	1
Farm chemical use high			NO	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A			YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A			1	1	1	1
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)			YES	6	7	7
(Score = # Sources X 2) 8 Points Maximum				8	8	8
Sources of Class II or III leacheable contaminants or			YES	2	5	2
4 Points Maximum				2	4	2
Zone 1B contains or intercepts a Group 1 Area			YES	2	0	2
Land use Zone 1B			25 to 50% Irrigated Agricultural Land	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B			14	14	14	10
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present			YES	2	2	2
Sources of Class II or III leacheable contaminants or			YES	1	1	1
Land Use Zone II			Less than 25% Agricultural Land	0	0	0
Potential Contaminant Source / Land Use Score - Zone II			3	3	3	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present			NO	0	0	0
Sources of Class II or III leacheable contaminants or			NO	0	0	0
Is there irrigated agricultural lands that occupy > 50% of			NO	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone III			0	0	0	0
Cumulative Potential Contaminant / Land Use Score			18	18	18	9
4. Final Susceptibility Source Score			11	11	11	11
5. Final Well Ranking			High*	High*	High*	High*

* High score due to presence of possible contaminant sources in Zone 1A, and/or detection of IOC above MCL. Rating would otherwise be on the high end of medium.